



ReadyPanel™ 6.5

User's Guide

P/N 5001795A Rev A

Notice Page

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REVISION HISTORY

Revision	Reason for Change	Date
A, 2	Preliminary Release	May/06
A, A	Initial Release	Mar/07

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Audience Assumptions

This manual is for the person who designs computer related equipment, including but not limited to hardware and software design and implementation of the same. Ampro Computers, Inc. assumes you are qualified in designing and implementing your hardware designs and its related software into your prototype computer equipment.

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Chapter 1 ReadyPanel Setup

About the ReadyPanel

The ReadyPanel products are intended for users of turn-key embedded systems who prefer long life cycle, configuration controlled computers over desktop grade systems with frequently changing motherboards. ReadyPanel models feature the ReadyBoard single board computer (SBC), with a range of processors from the Intel Celeron® M CPU to the Intel Pentium® M CPU, and a range of SODIMMs described in the reference manual of each ReadyBoard product. The desired operating system (OS) is pre-loaded onto the internal compact flash card. Just load your application software and you are ready to use your system applications.

Using this Guide

This guide provides the most efficient way to set up your ReadyPanel with your desired operating system (OS). The instructions provided in this guide include:

- Removing the ReadyPanel from the shipping container and inspecting the accessories
- Connecting peripherals to the ReadyPanel
- Powering up the ReadyPanel

Information not provided in this User's Guide includes:

- ReadyBoard specifications
- Environmental requirements
- ReadyBoard connector/pin numbers and definitions
- Operating system programming or operating instructions

NOTE Refer to Ampro's Linux OS manual or other OS manufacturers' manuals for instructions when using OS software.
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Requirements

The following peripherals and devices are needed to make full use of the ReadyPanel.

- Peripherals (customer provided):
 - ♦ PS/2 keyboard and PS/2 mouse - optional
 - ♦ CRT or LCD monitor (VGA) - optional
- Power Supply (customer supplied):
 - ♦ ATX, AT, or Dual Voltage Lab power supply (+5VDC to +12VDC)

CAUTION Using a power supply with a higher voltage will damage the system.

- Optional device/Peripheral connections:
 - ♦ Ethernet (LAN) connection
 - ♦ USB device connections

Power Specifications

Table 1-1 lists the current draw values of the ReadyPanel.

Table 1-1. System Current Draw

Parameter	+5VDC	+12VDC
Idle	2.11A (10.53W)	0.81A (9.75W)
In-rush* Current (Typical)	Max: 2.64A (13.20W) Min: 0.64A (3.20W)	Max: 1.36A (16.32W) Min: 0.16A (1.92W)
BIT** Current (Typical)	2.73A (13.66W)	0.81A (9.67W)

Notes: *In-rush measured with CRT monitor, LCD panel, touch controller, touch screen, 256MB RAM, inverter, power, compact flash with Win XPe, keyboard and mouse.

**The BIT (burn in test) is conducted with the same criteria as In-rush plus two serial loopbacks, two USB jump drives, and one Ethernet port connection.

What's in the Box

The Contents List identifies the items in the shipping container for the ReadyPanel QuickStart Kit. The first of multiple boxes may contain all of the accessories on the Contents List. See Figure 1-1.

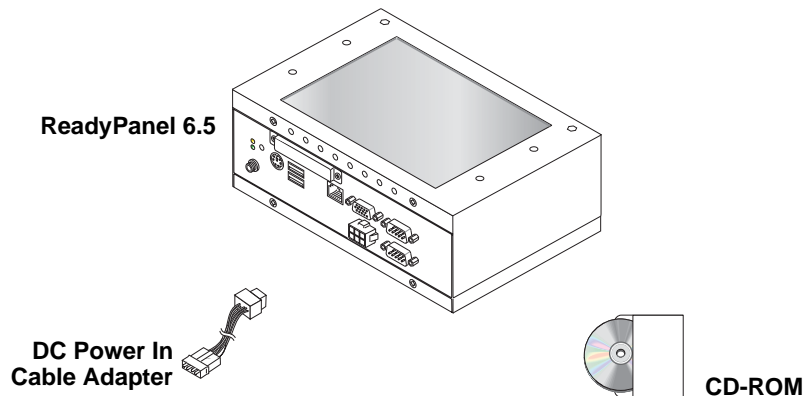


Figure 1-1. ReadyPanel and Accessories

Setup Steps

Make sure to follow the setup steps in this section in the exact order listed but skip any steps that do not apply to your needs. References are provided to chapters within this guide or other Ampro manuals for more information about installation and use of this ReadyPanel.

Preparations

1) Open shipping box.	<ul style="list-style-type: none"> • Locate the ReadyPanel Contents List. See Figure 1-1. • Unpack the contents of the shipping box.
2) Verify contents.	<ul style="list-style-type: none"> • Verify the contents of the shipping box against the Contents List included with your ReadyPanel shipping box. • If anything is missing or damaged, call your sales representative. Refer to the Ampro web site at www.ampro.com for contact information.
3) Verify support documentation. (ReadyBoard Support Software CD-ROM located in the first QuickStart Kit)	<p><i>ReadyPanel User's Guide</i></p> <p>This document describes how to set up and power up the ReadyPanel and is provided on the ReadyBoard Support Software CD-ROM as a PDF file.</p>
	<p><i>ReadyBoard Reference Manual</i></p> <p>This document provides detailed reference information on the ReadyBoard and is located on the ReadyBoard Support Software CD-ROM as a PDF file.</p>
	<p><i>ReadyBoard QuickStart Guide</i></p> <p>This document describes how to set up, install, and power up the ReadyBoard installed inside the ReadyPanel enclosure and is located on the ReadyBoard Support Software CD-ROM as a PDF file.</p>
	<p><i>Operating System Manual(s)</i></p> <p>These documents describe how to use the desired operating system (OS) with the ReadyPanel and provide more detailed programming and operating information. These documents may or may not be provided with ReadyPanel depending on the specific licensing requirements.</p>

Setting Up the Work Space

CAUTION	<p>To prevent damage to the ReadyPanel, ensure sufficient clearance exists around the air vents for unrestricted airflow.</p> <p>The air temperature inside the enclosure could rise above the specified operating temperature limits if the airflow through the vents is restricted.</p>
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4) Select workbench location.	<ul style="list-style-type: none"> • The workbench location should be a flat clean surface for setup and operation (including the connection of any external peripherals and optional devices). • Ensure sufficient airflow clearance exists around the complete enclosure. • Make sure to integrate mounting hardware or a method of tilting the ReadyBoard to one side to allow clearance for the cooling fan.
5) Unpack ReadyPanel.	<ul style="list-style-type: none"> • Remove the ReadyPanel from its shipping container and place it on a flat work surface. <p>The ReadyBoard and the ReadyPanel enclosure—with the desired OS pre-installed—form a complete system ready for operation.</p>

Installing Mounting Hardware

<p>6) Install the appropriate mounting hardware.</p>	<ul style="list-style-type: none"> Install the mounting hardware for surface or wall mounting to the bottom of the ReadyPanel. See Figure 1-2. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Note: Make sure the mounting plate clears the fan intake and provides enough height to allow for unrestricted air flow.</p> <p>Make sure not to drive the ends of the screws further than two screw threads past the ends of the PEM nuts located on the inside of the enclosure cover.</p> </div>
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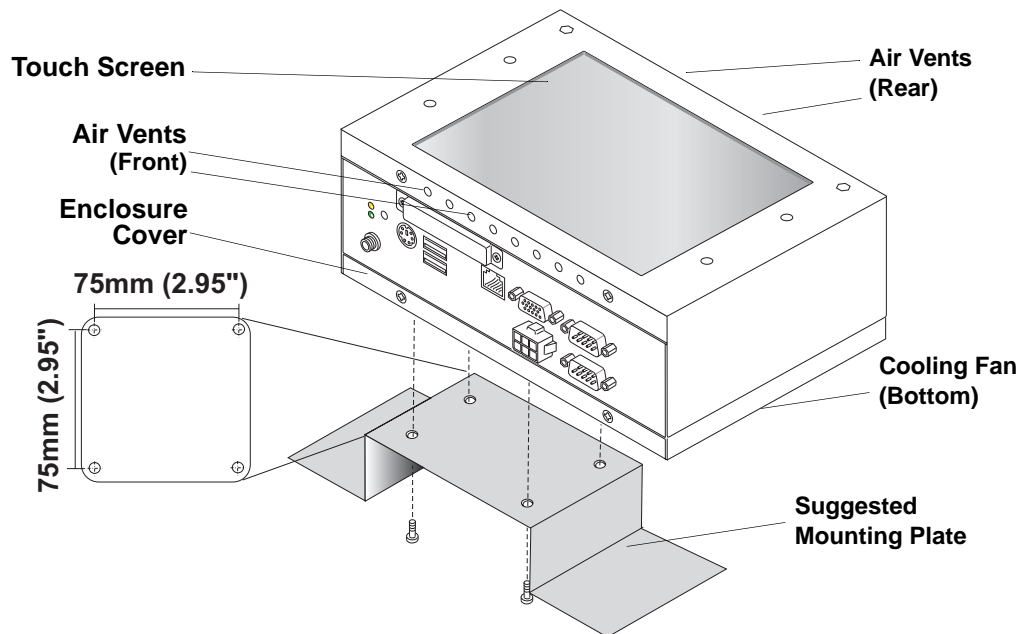


Figure 1-2. Angle View of Enclosure with Mounting Hardware

NOTE The Mounting holes in the bottom of the ReadyPanel conform to the FDMI (Flat Display Mounting Interface) standard for monitor mounting.

Locating the I/O Connectors

<p>7) Locate the I/O connectors on the front of the ReadyPanel.</p>	<p>Refer to Figure 1-3 and Table 1-2 for locations and descriptions of the connectors and controls before making connections or powering on the ReadyPanel.</p>
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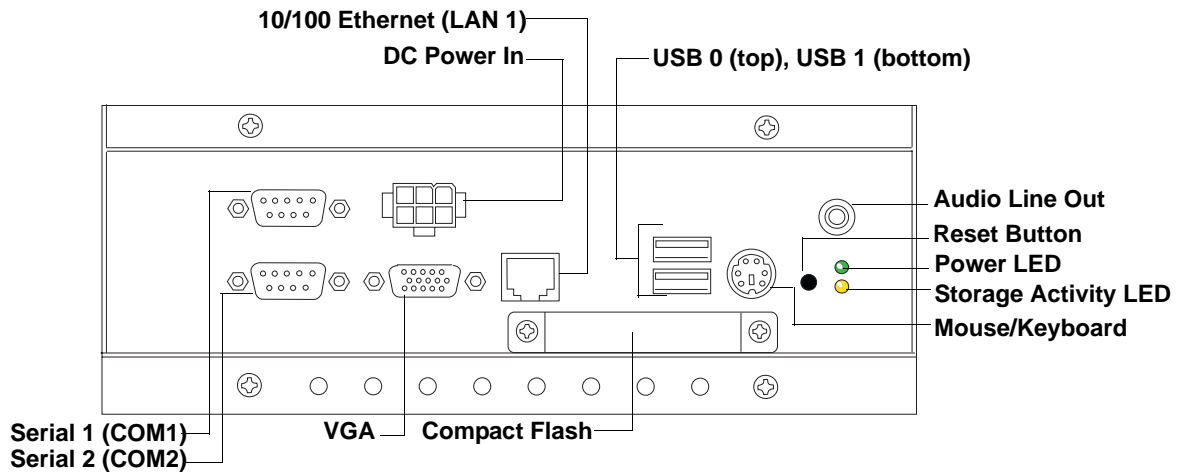


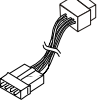
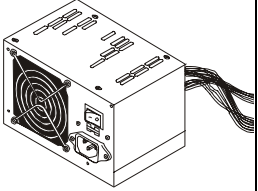
Figure 1-3. Flat View of ReadyPanel I/O Panel

Table 1-2. I/O Panel Connectors, Controls, and Indicators

Control/Connector	Description
DC Power In	This 6-pin connector accepts input from the external DC In cable adapter.
VGA	Use this standard 15-pin (DB15) connector for the video connection. This connector resides on the ReadyBoard.
Mouse/Keyboard	This 6-pin single PS/2 mouse and keyboard connector resides on the ReadyBoard.
USB 0 & 1	These standard USB connectors reside on the ReadyBoard.
LAN 1 (Ethernet 1)	This 8-pin (RJ45) Ethernet port is used for the 10/100BaseT Ethernet connection and resides on the ReadyBoard.
COM 1 & COM 2 (Serial 1 & Serial 2)	Use these two 9-pin (DB9) serial ports for the standard RS232 connections to the ReadyPanel. These connectors reside on the ReadyBoard.
AUDIO: Line Out	Use this audio out connector for standard stereo out connection from the ReadyPanel.
Power LED	This green power-on indicator, shown in Figure 2-1 on page 10 , resides on the ReadyBoard and glows when power is turned on and goes dark when the ReadyPanel power is turned off.
Storage Activity LED	This yellow activity indicator, shown in Figure 2-1 on page 10 , resides on the ReadyBoard and flickers when IDE or compact flash card activity occurs in the ReadyPanel.
Reset Button	Press this reset button, momentarily, to reset the ReadyPanel (hard reset). This button resides on the ReadyBoard.
Compact Flash Cover and Slot	This compact flash cover and slot (not shown) protects the compact flash card if installed, and ensures good EMI shielding for the ReadyPanel.
Compact Flash Socket (not shown)	The compact flash socket is provided on the underside of the ReadyBoard and accepts the compact flash card through the compact flash slot.

NOTE If you wish to connect a Hard Disk Drive (HDD) Floppy Disk Drive (FDD) or CD-ROM to the ReadyPanel, you can use one of the USB ports to connect the device.

Connecting the Power Supply

<p>8) Connect the DC Power In adapter cable.</p> 	<ul style="list-style-type: none">Plug in the DC Power In adapter cable, provided with the ReadyPanel, to the DC Power In connector on the ReadyPanel. See Figure 1-3. <div data-bbox="565 296 1354 369" style="border: 1px solid black; padding: 5px;"><p>Note: Using an ATX power supply requires the PS-ON signal grounded to power on.</p></div>
<p>9) Connect the power supply.</p> 	<ul style="list-style-type: none">Plug in the free end of the power adapter cable to an ATX or AT power supply.

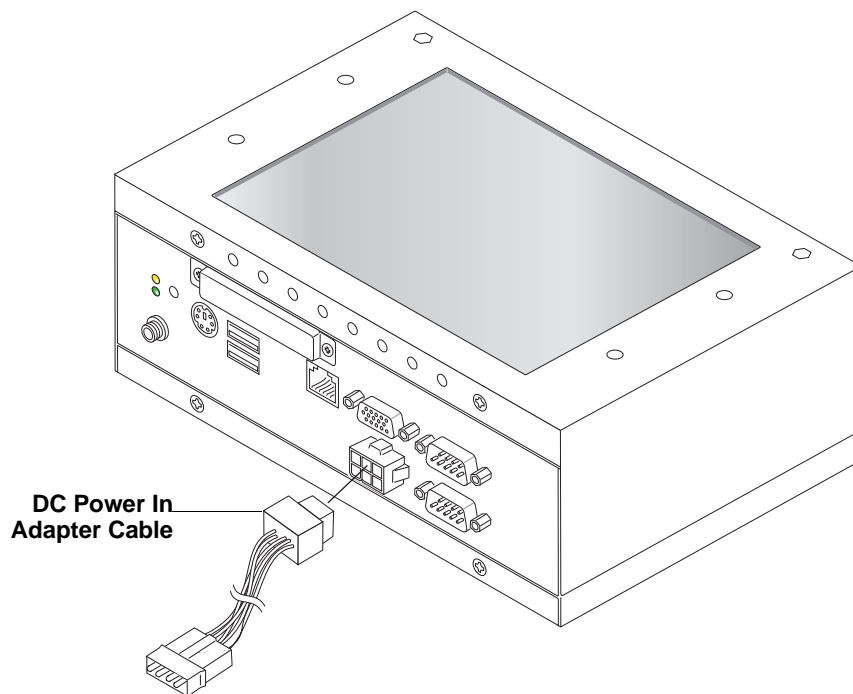


Figure 1-4. Angle View of ReadyPanel I/O Panel

Applying Power to the ReadyPanel

10) Power up the ReadyPanel.	<ul style="list-style-type: none"> • Plug in the ATX/AT/Lab power supply to the AC outlet. • Turn on the power supply.
11) Verify the ReadyPanel satisfactorily powers on.	<ul style="list-style-type: none"> • Verify the ReadyPanel passes POST successfully. • Wait for the OS to load as shown below, and the touch controls to appear on the touch screen, providing you the ability to load your applications onto the compact flash card. <div data-bbox="639 512 1451 615" style="border: 1px solid black; padding: 5px;"> <p>Note: If the OS does not load, an error message will appear: “Disk boot failure, insert system disk and press enter” near the end of the boot process.</p> </div> <ul style="list-style-type: none"> • Press R to reboot the system and try again or press S to enter the BIOS Setup utility.

(The Linux 2.6 OS is shown as an example.)
GNU GRUB version 0.95 (632k lower/250768 upper memory)

Fedora Core (2.6.9-xxx)

RdyPnl1_05a

Use the | and ↓ keys to select which entry is highlighted. Press Enter to boot the selected OS, ‘e’ to edit the commands before booting, ‘a’ to modify the kernel arguments before booting, or ‘c’ for a command-line.

NOTE The GNU GRUB boot loader screen will continue to display indefinitely unless you execute one of the listed options.

12) Using the Operating System (OS)	<ul style="list-style-type: none"> • Refer to the desired OS manual (Ampro’s Linux or OS Manufacturer’s) that may or may not be provided with the ReadyPanel—depending on licensing agreements. • If you require drivers not installed on the compact flash, refer to the Ready-Board Support Software CD-ROM, if available, for additional drivers and instructions.
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Chapter 2 ReadyPanel Components

This chapter discusses components inside the ReadyPanel enclosure. These components include the memory, display power inverter, touch screen controller card, cables, and the ReadyBoard Single Board Computer (SBC).

NOTE Refer to the specific ReadyBoard Reference Manual for more information than this chapter provides.

ReadyPanel Assembly Procedures

The following procedures describe how to gain access to the ReadyPanel internal components and the ReadyBoard memory.

Tools Required

Use these tools to install and remove components into or out of the ReadyPanel enclosure.

- Phillips #2 screwdriver
- Anti-static service kit - Use a complete anti-static service kit (or the equivalent) to remove or install the ReadyBoard. A complete anti-static service kit should include a static-dissipating work surface, a chassis clip lead, and a wrist or ankle strap.

Opening the ReadyPanel Enclosure

Always use the following procedure when gaining access to the ReadyPanel's internal components.

To remove the cover of the ReadyPanel

1. Initiate a shut down sequence through the OS, or hold in the reset switch for 4-6 seconds to turn off power. See [Figure 1-3 on page 5](#).
2. Make sure the power LED on the front panel is completely inactive. See [Figure 1-3 on page 5](#).
3. Disconnect the power cable from the DC Power In connector of the I/O panel.

CAUTION Components on the ReadyBoard are sensitive to static electricity and can be easily damaged by improper handling. Do the following when handling the ReadyBoard.

Always use an anti-static wrist/ankle strap and a grounding mat.

Before you handle the ReadyBoard, touch a grounded, unpainted metal surface to discharge any static electricity.

4. Remove the cover from the ReadyPanel enclosure. See [Figure 2-1](#).
 - a. Turn over the ReadyPanel so that the touch screen faces down on an anti-static surface.
 - b. Remove the four cover screws that mount the cover to the enclosure.
 - c. Lift the cover up from the enclosure.
 - d. Unplug the fan cable from the fan connector on the ReadyBoard.
 - e. Set aside the cover and screws for later re-installation.

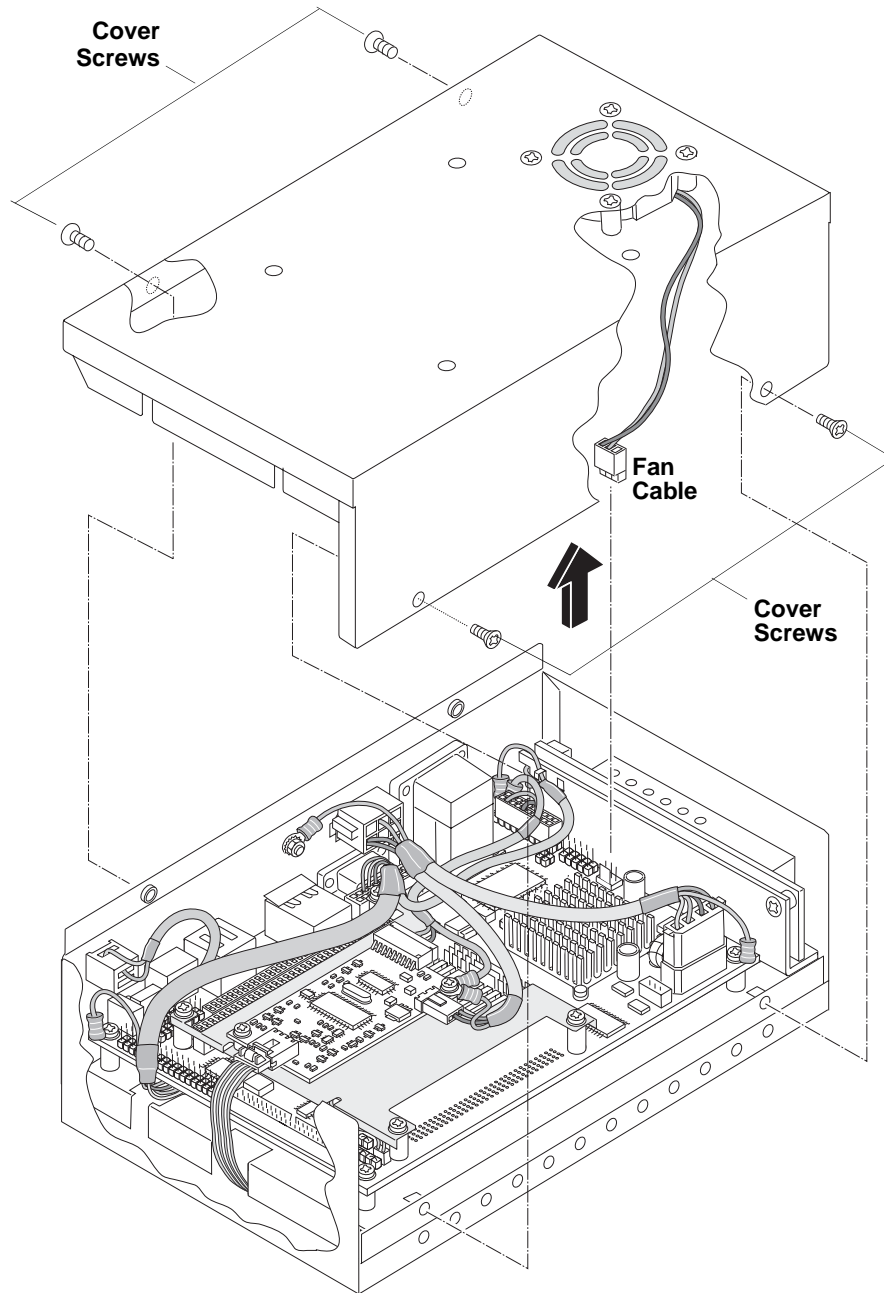


Figure 2-1. Exploded View of ReadyPanel Assembly with Cover and Screws

Replacing the ReadyPanel Memory

The ReadyPanel has one SODIMM slot labeled DIMM1 on the under surface of the ReadyBoard. The ReadyPanel supports a range of SODIMMs depending on the ReadyBoard it contains. For memory specifications, refer to the specific ReadyBoard Reference Manual.

CAUTION	To prevent damage to the SODIMM, use good anti-static principles while performing these procedures.
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To Remove the SODIMM from the ReadyPanel (See [Figure 2-2](#) and [Figure 2-3](#))

1. Make sure the ReadyPanel has been shut down and disconnected from the power source.
2. Remove the ReadyPanel cover as described in [“Opening the ReadyPanel Enclosure”](#) on page 9.
3. Remove the two chassis mounting screws located below the I/O panel.
4. Disconnect the touch screen flex cable from the touch screen controller card and feed it out of the cable slot at the bottom of the chassis.
5. Disconnect the display power cable from the display inverter.
6. Lift the chassis assembly from the enclosure.

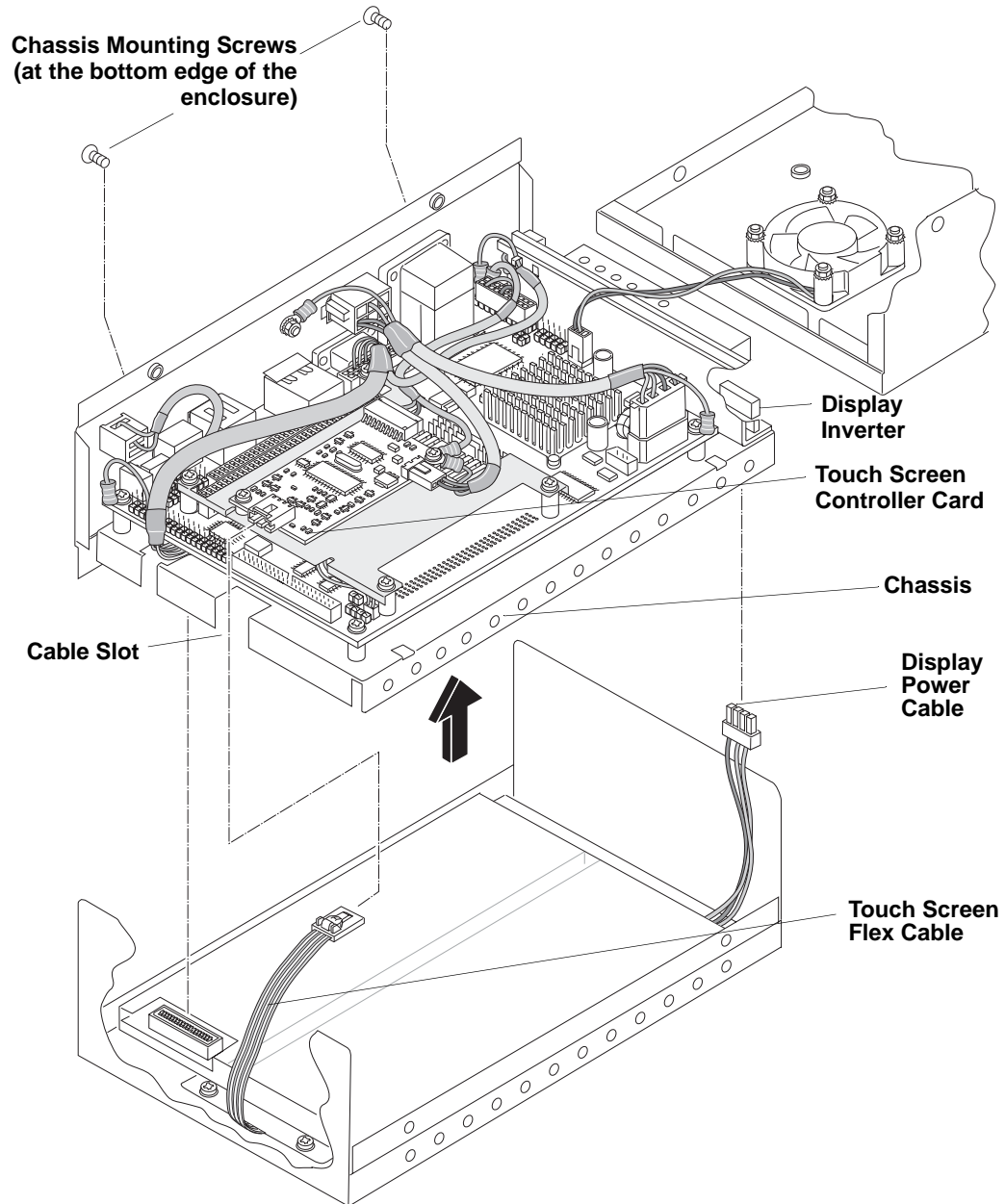


Figure 2-2. Exploded View of Enclosure with Chassis and Board

7. Remove the SODIMM through the cutout in the bottom of the chassis shown in [Figure 2-3](#).

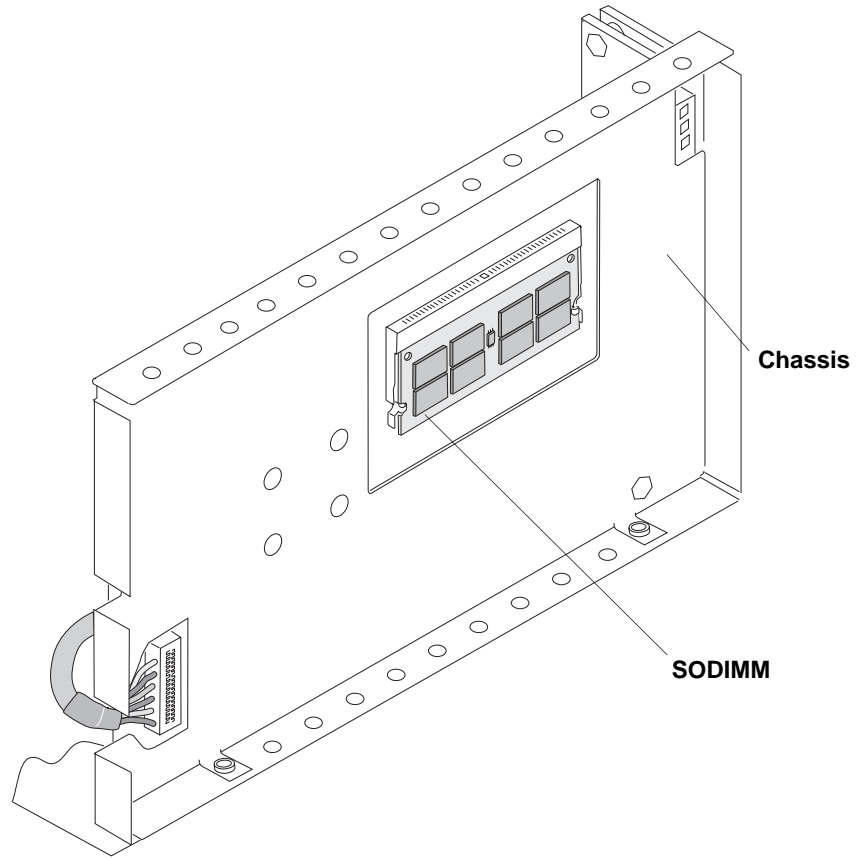


Figure 2-3. Bottom view of Chassis with SODIMM in Socket

To Install the SODIMM into the ReadyPanel

1. Make sure the ReadyPanel has been shut down and disconnected from the power source.
2. Follow the steps in the previous section to gain access to the SODIMM socket.
3. Install the SODIMM into the socket as shown in [Figure 2-3](#).

Appendix A Technical Support

Ampro Computers, Inc. provides a number of methods for contacting Technical Support listed in the Table A-1 below. Requests for support through Ask an Expert are given the highest priority, and usually will be addressed within one working day.

- Ampro Ask an Expert – This is a comprehensive support center designed to meet all your technical needs. This service is free and available 24 hours a day through the Ampro web site at <http://ampro.custhelp.com>. This includes a searchable database of Frequently Asked Questions, which will help you with the common information requested by most customers. This is a good source of information to look at first for your technical solutions. However, you must register online if you wish to use the Ask a Question feature.
- Personal Assistance – You may also request personal assistance by creating an Ask an Expert account and then going to the Ask a Question feature. Requests can be submitted 24 hours a day, 7 days a week. You will receive immediate confirmation that your request has been entered followed by an e-mail response. Once you have submitted your request, you must log in to My Stuff where you can check status, update your request, and access other features.
- InfoCenter – This service is also free and available 24 hours a day at the Ampro web site at <http://www.ampro.com>. However, you must sign up online before you can log in to access this service. The InfoCenter was created as a resource for embedded system developers to share Ampro's knowledge, insight, and expertise. This page contains links to White Papers, Specifications, and additional technical information.

Table A-1. Technical Support Contact Information

Method	Contact Information
Ask an Expert	http://ampro.custhelp.com
Web Site	http://www.ampro.com
Standard Mail	Ampro Computers, Incorporated 5215 Hellyer Avenue San Jose, CA 95138-1007, USA

